

# Engineering Report Expedition 361

Mauritius to Cape-Town SA (30 January to 31 March 2016)

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## OVERVIEW:

The main task for this expedition was to assemble the VIT Surface Telemetry box and re-fit Telemetry Pod S/N 1 with the new Seaview Telemetry cards. Pod S/N 2 will not be converted and all Surface VIT parts will be kept in the unlikely event we have to revert back to the Network telemetry.

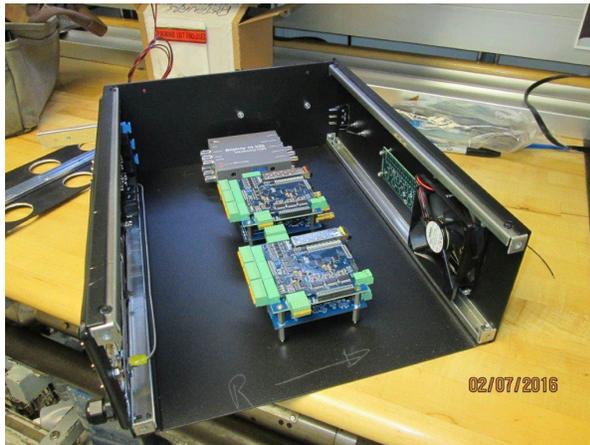
## A) ENGINEERING WORK SPACE:

Created Engineering work space with LED lighting and solder station aft end of DHML.

## B) SEAVIEW VIT TELEMETRY SYSTEM:

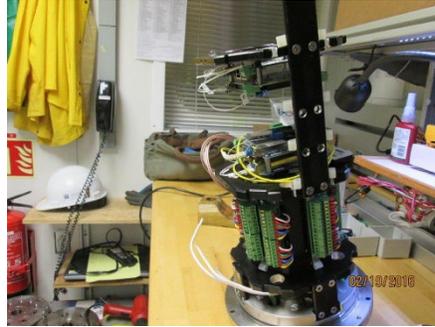
### 1) SURFACE TELEMETRY BOX:

- a) Installed Seaview telemetry cards, Black Magic converters, Optical distribution parts and Power supplies in 4U 19" BOX.
- b) Wired I/O's to backplane connectors.



### 2) TELEMETRY POD:

- a) Replaced 7 port end-cap with 11 port endcap.  
Mounting holes for center optical connector were changed from 10-32 to ¼-20. Discovered ¼-20 bolts could not pass through the flange holes in the connector. Siem mechanic drilled/tapped 10-32 holes at 45deg offset. The 2<sup>nd</sup> endcap needs to be modified in same way during CT tie-up. Wired end-cap connectors to distribution boards



- b) Removed redundant telemetry parts from Pod S/N 1 and installed Seaview telemetry cards. Connected to p-supplies and wired card I/O's to output ports.



### 3) SYSTEM TEST:

Completed the optical links between the Telemetry pod and Surface Telemetry box including a 15 dB, 25 dB and 25 dB attenuator in optical links OF-1, OF-2 and OF-3 respectively. The FORJ/Slipring was included in link. Actual link attenuation can only be measured when optical cable from winch to Subsea to DP has been pulled in and terminated, but is expected to be better than calculated.

- a) When power was applied, LED indicators on all cards for "Power" and "Link established" came on.

- b) 3 x SD Video inputs each on both SS 109 card sets functional.
- c) Serial inputs 3-8 on both SS-109 card sets showed activity on both TX and RX indicators, confirming correct wiring and circuit functionality.
- d) Both CH1 and CH2 on the SS-309 HD Video cards functional.
- e) On SS-209 GB card, confirmed both Port 1 and 2 functional. Port3 and not wired/not checked.
- f) Port 3 and Port 4 HD Camera “Survey” and Re-entry respectively both functional with RS 232 controls and HD Video.
- g) Re-entry camera NTSC video output, when switched, functional to Surface telemetry box.

#### **4) SLIPRING/FORJ:**

- a) Measured insertion loss on both FORJ’s, S/N’s 1518 and 1519 with both OTDR and power source/meter. At 1550nm measurements varied between -0.8 and -3.6dB. All better than the -4dB spec.
- b) Prepared both FORJ’s for installation by installing pressure gland at winch-end and waterproofing cable entry.
- c) Small Pelican-type case modified to store the spare FORJ.
- d) Machining to deepen bore in drum shaft to accommodate FORJ, to be done first half of tie-up in CT.
- e) Spacer, gaskets, bolts, glands and flexible protective tubing for installing FORJ all in a box in Subsea, marked as such.

#### **5) SUBSEA:**

The “Subsea FO-J BOX” was installed and a mounting for the optical splitter fabricated. FO connectors with patch-cords installed and splice-tray mounted. Outstanding is the FO cable from Winch and DP that will be pulled in and terminated during CT tie-up..

The “Subsea VIT J-BOX” was stripped of redundant parts. The Seaview SS-309 HD Video board, Black Magic SDI/HDMI converter and optical interface parts were installed. Functionality of video circuits to Subsea monitor and

Drill-shack confirmed. Outstanding is a SC to SC optical patch-cord from the adjacent FO j-box. Patch cord on order.

**6) FO CABLE:**

FO J-BOXES were installed in Subsea and DP.

Siem plans to pull in the FO cable from Winch to Subsea to DP during first half of CT tie-up.

**7) AS BUILT SCHEMATICS/DIAGRAMS:**

Available at: P:\2-Engineering Files\VIT\0 SEAVIEW VIT Telemetry\SCHEMATICS\Schematics pdf 03202016

**8) FCB-H11 HD CAMERA:**

- a) Installed a Sony FCB-H11 HD camera in the second Kongsberg pressure vessel (S/N 2). It is similar to the Survey HD camera with the only difference, the "wider field of view" optical port in the pressure vessel.
- b) Wired both cameras to output a NTSC composite video signal on connector pin 4, when commanded to, via RS232. This feature will offer redundancy in the case of the Seaview HD card failing.
- c) Replaced o-rings in Survey camera S/N 1 and installed a dc-dc converter to allow operation from the standard 24v supply.

We now have two HD cameras in smaller pressure vessels, S/N 1&2 with a spare HD camera only. We also have two SD cameras installed in the larger pressure vessels S/N SD1&SD2 with a spare SD camera only.

**C) ERS PROXIMITY SW.**

The Hall-effect proximity switch indicating the presence of a tool in the RS latch failed during the Exp 359 test. The initial assumption was that the failure was due to hydrostatic pressure on the Hall-effect semiconductor device but has to be verified. Some development is required to rectify this failure. It was decided to have a work-around ready for deployment on Exp 362./366 An IE4M plug was modified and used in place of the Hall-effect sensor plug. When a pulling neck enters the latch, it pushes against the spring/plug

breaking a contact. Leaving the latch will relax the spring and reset the contact. Status of this contact indicates the presence or not of a fishing neck in the RS-latch.



RS-latch with plug, pulling neck



"Tool Present" plug



Plug and pulling neck

Two changes have to be made to existing system to accommodate this work-around:

- 1) In the Electronics module) two wires have to be swapped on the MHDG-FCR 7pin connector. (Changes in wiring shown on ERS Schematic diagram)
- 2) In the "Pulling neck", the magnetic bolt must be replaced with standard bolt and adjusted for hole depth of 1.6"

One pulling neck has been modified. Electronics modules will be modified before end of expedition, time, sea-state permits.

#### **D) RIGWATCH:**

- 1) On the first site, Rigwatch application froze periodically requiring a re-start of the application on the Master. It was eventually traced to the Altech tracer pump comms circuit in the mud-pump room. Disconnecting this circuit in the Master resolved the issue.
- 2) Dongles expiring June 2016

#### **E) SET2 TEMPERATURE TOOL S/N 540:**

Replaced broken connector and confirmed tool serviceable.

#### **F) VIT UMBILICAL:**

Measured attenuation on all four umbilical fibers with OTDR and compared to traces shot when cable was accepted. No noticeable change.

#### **G) MDrive**

Designed interface circuit and associated PCB for MDrive motor used on the tracks in core-lab.